SPECIFICATIONS

Model 688AL

NIM-TO-TTL SECTION

No. of Channels: 8.

INPUT

Impedance: 50 Ω ±5%; reflections < 10% for rise time > 2 nsec.
Quiescent DC Level: 0 V.
Input Signal: Normal (logical "0" = 0 to -2 mA; logical "1" = -12 to -32 mA) or complementary fast NIM logic levels.
Input Protection: ±5 V.
Minimum Input Width: < 10 nsec.

OUTPUT

Signal Levels: Standard negative TTL logic levels: logical "1" ≤ 0.4 V, logical "0" > +2.5 V.
High Level Drive Capability: 50 mA at +2.5 V (compatible with terminated, direct-coupled 50 Ω cable).
Low Level Clamp Capability: 100 mA at 0 ±500 mV (60 standard TTL loads, or 50 Ω to +5 V).
Rise Time and Fall Time: < 10 nsec.
Output Duration: Approximately equal to input duration.
Output Impedance: < 5 Ω.
Duty Cycle Limitations: None.

GENERAL

Delay: Approximately 12 nsec.
Logic Polarity: Two front-panel switches, each common to four channels, provide normal operation (logical "1" IN gives logical "1" OUT) or complementary operation.

TTL-TO-NIM SECTION

No. of Channels: 8.

INPUT

Input Signal: Standard negative TTL logic levels (logical "1" = 0 to +0.8 V, requires -1.6 mA maximum; logical "0" = > -2 V, requires +100 μA maximum).
Minimum Input Duration: < 10 nsec.
Input Protection: ±5 A for 0.5 μsec, clamping at +7 V and -1 V.

OUTPUT

Signal Levels: Logical "0", open circuit; logical "1", -16 mA.
Output Duration: Approximately equal to input duration.
Rise Time and Fall Time: < 3 nsec.
Duty Cycle Limitations: None.

GENERAL

Delay: Approximately 6 nsec.
Logic Polarity: Two front-panel switches, each common to four channels, provide normal operation (logical "1" IN gives logical "1" OUT) or complementary operation.
Packaging: NIM single-width module; Lemo connectors.
Power Requirements: 280 mA at +6 V; 30 mA at +12 V; 300 mA at -6 V.

Model 4616

INPUT

ECL Inputs: 16, one per section, in a 2 x 17 pin connector; accepts complementary ECL levels; typical threshold 200 mV.
NIM Inputs: 16, one per section, Lemo-type connector, to be chosen out of the three Lemo-type connectors in the channel; the other two have to be kept unconnected; input impedance 50 Ω ±5%; reflections < 10% for input rise times > 2 nsec.

OUTPUT

ECL Outputs: 16, one per section, in a 2 x 17 pin connector; ECL complementary levels (-0.8 V and -1.7 V); rise time 2 nsec typical.
NIM Outputs: 48, three bridged outputs per section, Lemo-type connectors; quiescently at 0 mV, < -700 mV into 3 x 50 Ω loads, maximum -1.2 V into 1 x 50 Ω load, during output; rise time 2 nsec typical.

GENERAL

Maximum Frequency: 150 MHz.
Minimum Pulse Width: ECL and NIM inputs/outputs 4 nsec.
Transit Times: ECL input to NIM output < 6 nsec. ECL input to ECL output < 10.5 nsec. NIM input to ECL output < 6.5 nsec.
Power Requirements: -6 V quiescently at 700 mA, with all loads connected and all channels activated 1.7 A maximum.

SELECTION CHART

Model	688AL	4616
Function	TTL→ NIM, NIM → TTL	ECL → NIM, NIM → ECL
Number of Inputs/Outputs	8 TTL/8 NIM 8 NIM/8 TTL	16 NIM or ECL Inputs/ up to 36 NIM or 16 ECL Outputs